

## ABSTRACT OF THE DISCLOSURE

Silsesquioxane polymers that are useful for preparing  $\text{SiO}_2$ -rich ceramic coatings are obtained as the polymeric reaction products from the hydrolysis and condensation of organosilanes having a  $\beta$ -substituted alkyl group. A preferred silsesquioxane polymer is the polymeric reaction product obtained from  $\beta$ -chloroethyltrichlorosilane. More preferred silsesquioxanes are those with non-halogenated alkyl groups, such as the  $\beta$ -acetoxyethyl- and  $\beta$ -hydroxyethyl-silsesquioxanes. Coating compositions containing such silsesquioxane polymers dissolved in organic solvent may be applied to a substrate and converted to  $\text{SiO}_2$ -rich ceramic thin layers by evaporating the solvent and heating the coated substrate at moderate temperatures.